

**Indiana Department of Environmental Management  
Office of Air Management**

**Technical Support Document (TSD) for a  
General Federally Enforceable State Operating Permit (FESOP)  
for an Asphalt Plant**

The Office of Air Management (OAM) has developed a draft General Federally Enforceable State Operating Permit (FESOP) for asphalt pavement production plants, pursuant to 326 Indiana Administrative Code (IAC) 2-8-18. The operator of an asphalt plant that can meet the criteria of the General FESOP may, at the operator's option, apply for either the General FESOP or for a regular FESOP. The General FESOP requires the operator to accept a production limitation of 600,000 tons of asphalt mix for every twelve (12) consecutive month period, to control particulate matter emissions from the dryer/mixer process exhaust system with a baghouse type control device, to limit all emissions of particulate matter less than 10 microns in diameter (PM-10) to less than 0.13 pounds of PM-10 for every ton of asphalt mix, and to limit visible emissions from the process exhaust to less than twenty percent (20%) opacity. These limits will result in a limit on permitted air pollution emissions of less than half of those for a normal FESOP. In addition, the plant must have received a previous construction permit and be in compliance with all other air pollution control rules. The operator will not be allowed to operate in any area that is in severe nonattainment for a National Ambient Air Quality Standard.

During the development of the general permit, options for the daily monitoring the emissions from the baghouse were studied. IDEM determined that visible emission monitoring of the baghouse emissions can be an effective method of ensuring continual compliance with the permit emission limitations and standards.

An operator may wish to apply for a General FESOP because it contains some advantages over the normal IDEM FESOP. Current FESOPs require asphalt plants to do a precise test of the emissions from the process stack every five years. The emissions test is a complicated and expensive undertaking. The General FESOP allows the operator to go seven years between each stack test. IDEM retains the authority to require an additional stack test at any time. The General FESOP also allows two asphalt plants, owned or operated by the same business, to operate at one location if both plant have General FESOPs. Currently, this could be done only if the two plants modified their FESOPs. The General FESOP makes such a collocation of two plants possible without a permit modification. The General FESOP can also be issued soon after the operator applies for it, without going through a public notice or public review of a draft permit.

**Permitted Emission Units and Pollution Control Equipment**

The source is an asphalt plant composed of the dryer (either batch or drum type), a dryer/mixer burner and dryer/mixer exhaust system controlled by a baghouse, conveying equipment, liquid asphalt/oil heater(s), liquid storage tanks, and handling equipment. The asphalt plant may also include electrical generators. This source may include the insignificant activities, as defined in 326 IAC 2-7-1(21).

## Limited Potential Emissions

The emission limitations will keep air pollution emissions to less than fifty (50) tons of particulate matter, sulfur dioxide, volatile organic compounds, carbon monoxide, and nitrogen oxide emissions during any twelve (12) consecutive months. A source that will be located in an area within the jurisdiction of a local air pollution agency jurisdiction shall contact that agency to determine any additional emission limitations or operating requirements that may apply.

The fuel limitations are based on the amount of each fuel needed to produce the 600,000 tons of hot mix asphalt. The fuel limits are: 180 million cubic feet of natural gas, 1,200,000 gallons of #2 fuel oil, 1,800,000 gallons of propane and/or butane, or 600,000 gallons of waste oils. The use of more than one fuel will require application of the permit condition formula to meet the emissions limitations.

The acceptance of this general permit will:

- (a) Require, pursuant to the New Source Performance Standards, 326 IAC 12 (40 CFR 60.90 to 60.93, Subpart I, that particulate matter emissions shall not exceed 0.04 grains per dry standard cubic foot (gr/dscf) and visible emissions shall not exceed twenty (20%) percent opacity.
- (b) Pursuant to 326 IAC 6-1-2(a) and 326 IAC 2-8-18 (b), require the dryer/burner process stack particulate matter (PM) emissions from the baghouse gas to not exceed 0.03 grains per dry standard cubic foot.
- (c) Pursuant to 326 IAC 2-2, particulate matter less than 10 microns in diameter (PM-10) emitted from the dryer/mixer process exhaust system shall not exceed 0.13 pounds of PM-10 per ton of asphalt mix, including both filterable and condensibles fractions.
- (d) Require that a baghouse with at least 99.6% collection of particulate matter to control emissions from the dryer/burner process.
- (e) Require visible emission notations of from the dryer/burner process stack exhaust to be performed twice in the morning and twice in the afternoon and recorded. Each readings shall be separated by at least 1 hour.
- (f) Require that fugitive emissions be included with regulated particulate matter emissions to determine total emissions during a twelve (12) month consecutive period.
- (g) Limit all emissions to less than fifty (50) tons during a twelve (12) month consecutive period by product and fuel limitations by limiting the amount of asphalt produced and the amount of fuel that can be burner during a twelve (12) month consecutive period.
- (h) Not allow the plant to be located in areas that are designated as severe nonattainment.

## Potential To Emit

- (a) Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.
- (b) The potential to emit is the amount of potential emissions that can be produced operating at full capacity of the unit for 8,760 hours per year (24 hours \* 7 days \* 12 consecutive months) before controls are applied. The amount of asphalt to be produced

will be limited to 600,000 tons per 12 consecutive months. The additional requirement of applying a baghouse with at least 99.6 % collection efficiency will result in potential particulate matter emissions to less than 50 tons per year.

- (c) The tables below reflect the PTE before controls based on the source operating under production and each fuel usage limitation found in the permit conditions. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

The fugitive dust emissions have been included in the determination of the particulate matter emissions from the aggregate dryer (either batch or drum type) and quality of material handled to produce the 600,000 tons of hot mix asphalt. The inclusion of the fugitive emissions will ensure that the total PM emissions from all the operations do not exceed the fifty (50) tons limit during a twelve (12) consecutive month period. The fugitive dust emissions were determined using factors and equations that have been developed by the United States Environmental Protection Agency.

|                  |  |                  |                 |            |     |                 |
|------------------|--|------------------|-----------------|------------|-----|-----------------|
|                  | Potential Emissions in tons/year with dryer burners fired by 180 million cubic feet of natural gas per twelve (12) consecutive month period. |                  |                 |            |     |                 |
| Process/facility | PM   | PM <sub>10</sub> | SO <sub>2</sub> | VOC        | CO  | NO <sub>x</sub> |
| Total Emissions  | 5710   | 1323             | negligible      | negligible | 3.6 | 25.2            |

|                  |  |                  |                 |            |     |                 |
|------------------|--|------------------|-----------------|------------|-----|-----------------|
|                  | Potential Emissions in tons/year with dryer burners fired 1,200,000 gallons of distillate oil per twelve (12) consecutive month period |                  |                 |            |     |                 |
| Process/facility | PM   | PM <sub>10</sub> | SO <sub>2</sub> | VOC        | CO  | NO <sub>x</sub> |
| Total Emissions  | 5710   | 1323             | 42.6            | negligible | 3.0 | 12.0            |

|                  |  |                  |                 |            |     |                 |
|------------------|--|------------------|-----------------|------------|-----|-----------------|
|                  | Potential Emissions in tons with dryer burners firing only waste oil with less than 1% sulfur base on 600,000 gallons per twelve (12) consecutive month period |                  |                 |            |     |                 |
| Process/facility | PM   | PM <sub>10</sub> | SO <sub>2</sub> | VOC        | CO  | NO <sub>x</sub> |
| Total Emissions  | 5710   | 1323             | 45              | negligible | 1.5 | 20.0            |

#### Maximum Allowable Emissions

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Federally Enforceable State Operating Permit.

|                  | Allowable Emissions with 99.6% collection efficiency baghouse for PM & PM <sub>10</sub> (tons/year) per twelve (12) consecutive month period |                  |                 |       |      |                 |
|------------------|--|------------------|-----------------|-------|------|-----------------|
| Process/facility | PM   | PM <sub>10</sub> | SO <sub>2</sub> | VOC   | CO   | NO <sub>x</sub> |
| Total Emissions  | 49.9   | 49.9             | 49.9            | 49.9* | 49.9 | 49.9            |

\* The VOC emission limit of 49.9 tons includes the emissions from producing cold mix asphalt.

#### Actual emissions

The table below summarizes the potential to emit operating within production and fuel limitations based on accepted EPA emission factors after controls. The control equipment is considered federally enforceable only after issuance of this permit.

|                  | Actual Emissions (tons/year) with 99.6% collection efficiency baghouse for PM & PM <sub>10</sub> and dryer burners firing, only 180 million cubic feet of natural gas per twelve (12) consecutive month period. |                  |                 |      |      |                 |
|------------------|---|------------------|-----------------|------|------|-----------------|
| Process/facility | PM  | PM <sub>10</sub> | SO <sub>2</sub> | VOC  | CO   | NO <sub>x</sub> |
| Total Emissions  | 39  | 6                | 0.05            | 0.25 | 3.60 | 25.2            |

|                  |   |                  |                 |      |      |                 |
|------------------|---|------------------|-----------------|------|------|-----------------|
|                  | Actual Emissions in tons with 99.6% collection efficiency baghouse for PM & PM <sub>10</sub> and dryer burners firing only 1,200,000 gallons of distillate oil per twelve (12) consecutive month period |                  |                 |      |      |                 |
| Process/facility | PM  | PM <sub>10</sub> | SO <sub>2</sub> | VOC  | CO   | NO <sub>x</sub> |
| Total Emissions  | 39**  | 6                | 42.6            | 0.12 | 3.00 | 12.00           |

|                  |   |                  |                 |      |     |                 |
|------------------|---|------------------|-----------------|------|-----|-----------------|
|                  | Actual Emissions in tons with 99.6% collection efficiency baghouse for PM & PM <sub>10</sub> and dryer burners firing only 600,000 gallons of oil with less than 1% sulfur per twelve (12) consecutive month period |                  |                 |      |     |                 |
| Process/facility | PM  | PM <sub>10</sub> | SO <sub>2</sub> | VOC  | CO  | NO <sub>x</sub> |
| Total Emissions  | 39**  | 6                | 45              | 0.10 | 1.5 | 20.10           |

|                  |   |                  |                 |      |      |                 |
|------------------|---|------------------|-----------------|------|------|-----------------|
|                  | Actual Emissions in tons with 99.6% collection efficiency baghouse for PM & PM <sub>10</sub> and dryer burners firing only 1,800,000 gallons of Butane per twelve (12) consecutive month period |                  |                 |      |      |                 |
| Process/facility | PM  | PM <sub>10</sub> | SO <sub>2</sub> | VOC  | CO   | NO <sub>x</sub> |
| Total Emissions  | 39**  | 6                | 0.02            | 0.36 | 3.24 | 18.90           |

|                  |   |                  |                 |      |      |                 |
|------------------|---|------------------|-----------------|------|------|-----------------|
|                  | Actual Emissions in tons with 99.6% collection efficiency baghouse for PM & PM <sub>10</sub> and dryer burners firing 1,800,000 gallons of propane per twelve (12) consecutive month period |                  |                 |      |      |                 |
| Process/facility | PM  | PM <sub>10</sub> | SO <sub>2</sub> | VOC  | CO   | NO <sub>x</sub> |
| Total Emissions  | 39**  | 6                | 0.02            | 0.27 | 2.88 | 17.10           |

\*\* The PM emissions will be below these emissions based on 0.03 grains per dry standard cubic foot of airflow depending on the plant capacity and air flow rate.

### County Attainment Status

Volatile organic compounds (VOC) and oxides of nitrogen (NO<sub>x</sub>) are precursors for the formation of ozone. Therefore, VOC and NO<sub>x</sub> emissions are considered when evaluating the rule applicability relating to the ozone standards. The source will be able to locate in any county that is not designated as Severe Nonattainment.

### **Federal Rule Applicability**

40 CFR 60.90 Subpart I (Opacity Emission Limitation)

The visible emissions from the hot mix asphalt facility shall not exceed twenty (20%) percent opacity.

326 IAC 20-1 & 40 CFR63 Subpart A (Hazardous Air Pollutants). This asphalt plant is not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs).

326 IAC 12 & 326 IAC 2-8-18 & 40 CFR Part 60.116 Subpart Kb (Volatile Liquid Storage Tanks).

Pursuant to New Source Performance Standard (NSPS), 326 IAC 12,(40 CFR Part 60.116b only, Subpart Kb), and 326 IAC 2-8-18, the permittee shall maintain accessible records for the life of storage tank(s). These records shall include:

- (a) The date the tank was manufactured,
- (b) The dimension of the storage vessel,
- (c) An analysis showing the capacity of each storage vessel, and
- (d) The vapor pressure of the VOC stores; indicating the minimum true vapor pressure of the VOC is less than 15 kPa.

### **State Rule Applicability - Entire Source**

326 IAC 1-5-2 (Emergency Reduction Plans; Submission)

The permittee that has not prepared and submitted a written emergency reduction plan (ERPs) shall submit a written ERP.

326 IAC 2-8-4(3)(C) & 326 IAC 2-1.1-11 (General Reporting Requirements)

To affirm that the source has met all the compliance monitoring requirements stated in this permit the source shall submit a Quarterly Compliance Monitoring Report. Any deviation from the requirements and the date(s) of each deviation must be reported. Any deviation from the requirements and the date(s) of each deviation must be reported. The Compliance Monitoring Report shall include the certification by the Authorized Individual, as defined by 326 IAC 2-1.1-1(1).

326 IAC 2-8-4(9) (Preventive Maintenance)

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device. The Preventive Maintenance Plan will be kept on site

326 IAC 2-8-5(1) (Testing Requirements)

The Permittee shall perform PM and PM-10 testing. The required testing shall be conducted on the following schedule:

- (a) New asphalt plants shall be stack tested within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up.
- (b) A test for existing plant shall be repeated at least once every seven (7) years. The seven (7) year period shall be from the date of last valid compliance demonstration test.

- (c) Existing plants that have not conducted a stack test shall submit a test protocol no later than 180 days after issuance this permit.

Test procedures shall be Methods 5, 9, or 17 (40 CFR 60, Appendix A) for PM and Methods 201 or 201A and 202 (40 CFR 51, Appendix M) for PM-10, or other methods as approved by the Commissioner. The PM-10 emissions includes filterable and condensibles PM-10

**326 IAC 2-8-5(a)(1) (Annual Compliance Certification)**

The Permittee shall annually submit a compliance certification report which addresses the status of the sources compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The certification shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted in letter form no later than April 15.

**326 IAC 2-6 & 326 IAC 2-8-4(3) (Emission Statement)**

The Permittee shall submit an annual emission statement certified pursuant to the requirements of 326 IAC 2-6. This annual statement must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8) (Emission Statement Operating Year).

**326 IAC 5-1 (Visible Opacity Limitations)**

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:
- (1) Opacity in Clark, Dearborn, Dubois (Bainbridge Township), Marion, St. Joseph, Vanderburgh and Vigo counties shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
  - (2) Opacity in remaining counties, except Lake County, shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
  - (3) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9.

**State Rule Applicability - Individual Facilities**

**236 IAC 6-1 & 326 IAC 2-8-18 (Particulate Matter Emission Limitations)**

Pursuant to 326 IAC 6-1-2(a) and 326 IAC 2-8-18 (b), the Dryer/Burner Process Stack particulate matter (PM) emissions in the baghouse gas shall not exceed 0.03 grains per dry standard cubic foot.

**326 IAC 6-3-2 (Process Operations)**

The particulate matter (PM) from the from the dryer/mixer process exhaust system shall be limited by product production limitations.

326 IAC 8-5-2 (Volatile Organic Compounds)

The VOC (solvent) used as diluent in the liquid binder used in cold mix asphalt production of cold mix asphalt from the plant shall be limited to 50 tons per twelve (12) consecutive month period. This is equivalent to 47.5 tons of VOC emissions emitted per twelve (12) consecutive months based on 95% by weight VOC solvent evaporation. This shall be achieved by limiting the total VOC (solvent) of any one selected binder to not exceed the stated limit for that binder during the last twelve (12) months. When more than one binder is used, the equivalency formula must be applied so that the total of all VOC (solvent) used shall not exceed 50 tons per twelve (12) consecutive month period, base on 95% by weight of the VOC (solvent) evaporating.

326 IAC 12 [Particulate Matter (PM)]

Pursuant to the New Source Performance Standards, 326 IAC 12 (40 CFR 60.90 to 60.93, Subpart I, particulate matter emissions from hot mix asphalt facility shall not exceed 0.04 grains per dry standard cubic foot (gr/dscf).

329 IAC 13-8 (Used Oil Requirements)

- (a) Pursuant to 329 IAC 13-3-2 (Used Oil Specifications), used oil burned for energy recovery that is classified as off-specification used oil fuel shall comply with the provisions of 329 IAC 13-8 (Used Oil Burners Who Burn Off-specification Used Oil For Energy Recovery), including:
  - (1) Receipt of an EPA identification number as outlined in 329 IAC 13-8-3 (Notification),
  - (2) Compliance with the used oil storage requirements specified in 329 IAC 13-8-5 (Used Oil Storage), and
  - (3) Maintain records pursuant to 329 IAC 13-8-6 (Tracking).
- (b) The waste oil burned in the dryer/mixer burner shall comply with the used oil requirements specified in 329 IAC 13 (Used Oil Management). The burning of mixtures of used oil and hazardous waste that is regulated by 329 IAC 3.1 is prohibited at this source.

326 IAC 2-8-4 & 326 IAC 2-8-5(a)(1) (Monitoring Baghouse on the Dryer/Burner Process Stack)

- (a) The baghouse for PM control shall be in operation at all times when the mixer dryer or dryer/mixer burners are in operation.
- (b) Visible emission notations of from the dryer/burner stack exhaust shall be performed by a trained employee twice in the morning and twice in the afternoon and recorded. The readings shall be separated by at least 1 hour. A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (c) Any visible emissions, not including condensed water vapor, from the dryer/mixer process exhaust system stack or baghouse shall require making a determination of the reason for the emissions. A baghouse failure shall require implementation of condition D.11.
- (d) The notation records shall indicate when the dryer /burner is not operating during a production day. The days that no production is generated, only one notion shall be required.



- (e) The Compliance Response Plan for this source shall contain troubleshooting contingency and response steps and response steps that when visible emissions are observed shall be implemented.
- (f) The inlet temperature to the baghouse shall be maintained within a range of 200-400 degrees Fahrenheit to prevent overheating of the bags and to prevent low temperatures from mudding up the bags. In the event that bag failure has occurred due to rupture, melting, etc., corrective action shall be taken. The Preventive Maintenance Plan for this unit shall contain troubleshooting contingency and corrective actions for when the inlet temperature reading is outside of the above mentioned range for any one reading. The baghouse shall shutdown for visual inspection within 24 hours and bags shall be replaced as needed.

## **Compliance Requirements**

Permits issued under 326 IAC 2-8-18 are required to demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAM, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements are applicable to this source are as follows:

### **Production Limitation:**

The asphalt plant shall not exceed a total production of 600,000 tons of asphalt mix per twelve (12) consecutive month period.

### **Burner Fuel Limitations**

The fuel combusted by the dryer/mixer burner, hot oil heaters, and all other combustion equipment shall be limited as follows:

- (a) Natural gas combusted shall not exceed 180 million cubic per twelve (12) consecutive month period rolled on a monthly basis,
- (b) Distillate (#2) combusted shall have a sulfur content less than or equal to 0.50 percent and shall not exceed 1,200,000 gallons per twelve (12) consecutive month period rolled on a monthly basis,
- (c) The amount of propane/butane that can be burned shall not exceed 1,800,000 gallons per twelve (12) consecutive month period rolled on a monthly basis,
- (d) Waste oils combusted shall have a sulfur content less than or equal to 1 percent and shall not exceed 600,000 gallons per twelve (12) consecutive month period rolled on a monthly basis, or
- (e) That fuels allotments in subparts a) through d) of this condition shall be adjusted

when combusting more than one fuel per twelve (12) consecutive month period rolled on a monthly basis to maintain emissions below fifty tons.

## **Record Keeping**

The Permittee shall maintain monthly records at the source of the following values:

- (a) To document compliance with Condition D.1, the Permittee shall maintain records in tons of daily asphalt mix production.
- (b) To document compliance with Condition D.2, the Permittee shall maintain records of daily fuel usage and maintain monthly records at the source of the following:
  - (1) Amount of each fuel used;
  - (2) The records for fuel oil shall contain a minimum of the following:
    - (i) Average sulfur content of any fuel oil used,
    - (ii) Average higher heating value of any fuel oil used,
    - (iii) The name of the fuel supplier, and
    - (iv) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.
- (c) To document compliance with Condition D.9 Volatile Organic Compounds VOC records shall be maintained in accordance with (1) through (3). Records shall include: delivery tickets, manufactures data, material safety data sheets (MSDS) necessary to verify the type and amount used. ASTM test results for asphalt cutback and asphalt emulsion may be used to document volatilization other than that listed in D.7 to confirm actual emissions.
  - (1) Amount and type of liquid binder used in the production of cold mix asphalt each day.
  - (2) Type and VOC solvent content by weight of the liquid binder used in the production of cold mix asphalt each day.
  - (3) Amount of VOC solvent used in the production of cold mix asphalt each day.

The Permittee shall retain records of all recording/monitoring data and support information for a period of five (5) years, or longer if specified elsewhere in this permit, from the date of the monitoring sample, measurement, or report. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

## **Visible Emission Notation Records Requirements**

The records of visible emissions notations shall be maintained on site for twenty-four (24) months and shall be made available upon request for an additional thirty-six (36) months.